

Appl. No. 09/745,104
Amdt. Dated 11/23/2004
Reply to Office Action of September 22, 2004

REMARKS/ARGUMENTS

This Amendment is in response to the Office Action mailed September 22, 2004. In the Office Action, claims 5-13 and 15-23 were rejected under 35 U.S.C. § 103. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 103

Claims 5-13, 15-18, and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mertol (USP 5,909,056) in combination of Iannacone (USP 4,975,142), Fillion (USP 6,306,680), Jow (...Microwave Curing of Epoxy...) and Jeng (USP 5,782,270). Applicants respectfully traverse the rejection because a *prima facie* case of obviousness has not been established.

As the Examiner is aware, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the combination of prior art references must teach or suggest all of the claim limitations. *See MPEP §2143, p.2100, 124 (8th Ed., rev.1, Feb 2003); see also In Re Fine, 873 F. 2d 1071, 5 U.S.P.Q.2D 1596 (Fed. Cir. 1988).* Herein, the first and third criterions have not been established.

More specifically, in contrast to the statements made in the Office Action, Mertol does not describe or suggest applying an encapsulant (310) over the integrated circuit, the thermal element and the thermal epoxy. *See Page 2 of the Office Action.* As shown in Figure 3, the encapsulant (310) is applied between the dam ring (303) and semiconductor die (311), but not over the components considered by the Examiner to be the integrated circuit (311), the thermal element (301) and the thermal epoxy (302). In fact, none of the cited references, either alone or in combination, suggest this limitation. Thus, *prima facie* case of obviousness has not been established.

In addition, none of the cited references, either alone or in combination, suggest the curing of the thermal epoxy with energy at a microwave frequency *without heating other components of the integrated circuit package, the curing of the thermal epoxy with the energy at the microwave frequency preventing (i) warpage of the integrated circuit package and (ii) epoxy pumping that would create air gaps between the thermal element and the integrated circuit.* Emphasis added. It is noted that the discovery of the source of a problem may result in a patentable invention despite the fact that the solution would have been obvious once the source of the problem was discovered. *See Eibel Process Co. v. Minnesota & Ontario Paper Co., 261 U.S. 45 (1923); In re Spinnable, 405 F.2d 578, 160 USPQ 237 (CCPA 1969).*

Second, in contrast to the statements made in the Office Action, Applicants have made no admission that the thermal epoxy contains carbon particles as set forth on page 2 of the Office Action.

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In light of the foregoing, Applicants respectfully request withdrawal of the outstanding §103(a) rejection. For the record, for any future examination of the subject application, Applicants respectfully request the Examiner to provide where (column, line numbers) alleged teachings applicable to claimed limitations are found in the cited references. Such information will facilitate prosecution of the subject application.

Claims 19, 21, 22, and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mertol (USP 5,909,056) in combination of Iannacone (USP 4,975,142), Fillion (USP 6,306,680), Jow (...Microwave Curing of Epoxy...) and Jeng (USP 5,782,270) in combination with AGEN (JP62-36091). Applicants respectfully disagrees and incorporates the arguments set forth above with respect to the §103(a) rejection as applied to claims 5-13, 15-18, and 20.

In addition, Applicants agree with the Office Action that neither Mertol, Iannacone, Fillion, Jow nor Jeng teach or suggest baking of the substrate along with the integrated circuit package, the thermal element and the thermal epoxy prior to curing the thermal epoxy. While AGEN (JP62-36091) describes baking the substrate, it does not describe or suggest the baking of the substrate *along with the integrated circuit package, the thermal element and the thermal epoxy prior to curing the thermal epoxy*. Emphasis added.

In light of the foregoing, Applicants respectfully request withdrawal of the outstanding §103(a) rejection as applied to claims 19 and 21-23.

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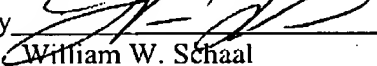
Conclusion

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Susan McFarlane
11/23/2004
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